

CLAIMS:

1. A surgical device (1) for use in minimally invasive surgery of the type using an inflated body cavity (2) accessible to a surgeon through an access port, defined by the device (1), surrounding an incision in a patient's body, the device (1) having: -

body cavity engagement means (5) for insertion into the incision to locate the device (1) in position;

fixing means (5,6) for attaching the device to a patient's skin;

the fixing means including a ring; characterized in that

the body cavity engagement means is adjustable by the positioning of the ring (5);

and

the positioning of the ring (5) retracting the body cavity engagement means to define an access port and create a sealing means between the incision and the body cavity engagement means;

the ring having an associated connector ring (7) for receiving additional seals or medical instruments; and

additional sealing means incorporating a foam shell (28) to prevent substantial leakage of gas from the body cavity (2) on inflation when in an inoperative position and formed to mould about a substantial portion of a surgeon's hand or surgical instrument on insertion in an operating position.

2. A surgical device as claimed in Claim 1, in which the ring is an anchor ring (5) formed for insertion into the incision.

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3. A surgical device as claimed in any one of the preceding claims, in which the sealing means is provided by a toroid cell (8) formed to engage the incision between the fixing means (6) and the body cavity engagement means (5).

- 5 4. A surgical device as claimed in Claim 3, in which the cell (8) forms a bladder through which the surgeon may access the body cavity, the bladder being filled with a viscous or semi-viscous liquid.

5. A surgical device as claimed in Claim 4, in which the bladder is filled with saline,
10 gel or foam.

6. A surgical device as claimed in Claim 1, in which the foam shell (28) is provided as a single block defining a passageway therein, to allow communication between the exterior and the cavity (2).

7. A surgical device as claimed in Claim 1, in which the foam shell (28) is formed in two parts, or as a single part partially divided along one axis, the parts being movable relatively to allow a surgeon access to the body cavity (2).

- 20 8. A surgical device as claimed in Claim 1, Claim 6 or Claim 7, in which the foam shell (28) is formed by a plurality of individually disengageable layers, so that the surgeon can adjust the height of the foam shell in response to particular needs by adding or removing foam layers whereby a single device (1) may be used on abdomens of varying thickness, enhancing flexibility of application.

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9. A surgical device as claimed in Claim 8, in which the rigidity created by the induced gas and foam apron allows for hand insertion and withdrawal without the aid of an assistant or requiring the surgeon to use the other hand.

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10. A surgical device as claimed in Claim 6, 7 or 8, in which the external valve created by the inclusion of the foam shell is enhanced by the pressure of the induced gas passing

up between the double walled tube and acting to force the opposing faces of film together outside the patients abdominal cavity.

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11. A surgical device as claimed in any one of the preceding claims in which the sealing means further incorporates a distal valve (31) for insertion into the body cavity.

12. A surgical device as claimed in Claim 11, in which the distal valve (31) includes a mechanical seal (32).

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